Update on the physical processes sub-groups

Julien Le Sommer and NDS-SG

Reminder from the previous DevCom (Sept. 2019)

What are we talking about

- Physical processes (or classes of motions) that should be accounted for in OGCMs, either *explicitly* or through *parameterisations*

- Processes in the OSBL are *a priori* discussed in NEMO air-sea interactions WG

- "***Parameterized***" processes :
  - mixing in the ocean interior and BBL (inc. overflows)
  - closures for balanced turbulence (meso, submeso, u/v, t/s)
  - …

- "**Resolved**" processes :
  - (quasi-) balanced turbulence (+ topography)
  - IGW and internal tides (propagation, dissipation)
  - barotropic motions (inc. tides) (propagation, dissipation)
  - …

Discussion during the previous DevCom (Sept. 2019)

- NEMO **working groups should be aligned** with the different chapters of NEMO Development Strategy (NDS) 2018-2022

- NEMO working groups should play a **increasing role in scoping** what should be the priorities for development

- NDS **chapter 5 on "Ocean Dynamics"** is not associated with a NEMO WG, so that we don't have a clear discussion and decision process

- **Reasons for this situation** have been discussed in Sept. 2019 (open science questions, config dependance, link with other WG)

- Discussion on how to foster small, **short lived groups** on specific topics of interest

Conclusions from the previous DevCom (Sept. 2019)

quoting the minutes :

- *It was agreed that this is a tricky issue and to try out Julien's proposal.*

- ***Action****: NDCSG to propose a short-list of topics to be discussed and the expected outcomes and to initiate one or two groups "tasked" with evaluating the options and priorities for NEMO on these topics.*

Update and proposition

Proposition discussed within NDS-SG (1/2)

- Identification of two areas where progress/coordination seems possible over the next years : "*tides / fast barotropic motions*" and "*eddy closures for non eddying configurations*"

▸ **Tides and fast barotropic motions :**

- Participants : A list of names has been discussed, possible participants have not been contacted yet. Need to appoint a group leader.

- ToR :
  - establish a list of ongoing activities/configurations/projects related to the representation of tides in NEMO configurations (for both regional and global scale)

  - establish an objective description of NEMO v4.0 status wrt the representation of tides incl. a list of known and documented issues/needs.

  - define a strategy for quantifying to what extent the new NEMO kernel in v4.2 improves the representation of tides in NEMO, possibly including dedicated test cases and larger simulations.

- Timeline : report at the Next DevCom (mid 2020)

Proposition discussed within NDS-SG (2/2)

- Identification of two areas where progress/coordination seems possible over the next years : *"tides / fast barotropic motions"* and *"eddy closures for non eddying configurations"*

▸ **Eddy closures for non eddying configurations**
  - Participants : A list of names has been discussed, possible participants have not been contacted yet. Need to appoint a group leader.
  - NB : A collaboration group has already worked a lot on these aspects with connections to NEMO (GEOMETRIC)
  - ToR :
    - steps and priorities towards a full integration of GEOMETRIC within NEMO
    - identify dependencies / needs with respect to other NEMO WPs (incl. kernel)
  - Timeline : report at the Next DevCom (mid 2020)